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FLOOD INSURANCE STUDY

WEBSTER PARISH, LOUISIANA
UNINCORPORATED AREAS

JULY 15, 1988

Federal Emergency Management Agency

COMPLETED

COMMUNITY NUMBER - 220357

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance study purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
	1.1 Purpose of Study	1
	1.2 Authority and Acknowledgments	1
	1.3 Coordination	1
2.0	AREA STUDIED	2
	2.1 Scope of Study	2
	2.2 Community Description	2
	2.3 Principal Flood Problems	4
	2.4 Flood Protection Measures	4
3.0	ENGINEERING METHODS	4
	3.1 Hydrologic Analyses	5
	3.2 Hydraulic Analyses	5
4.0	FLOODPLAIN MANAGEMENT APPLICATIONS	6
	4.1 Floodplain Boundaries	6
	4.2 Floodways	7
5.0	INSURANCE APPLICATION	7
6.0	FLOOD INSURANCE RATE MAP	9
7.0	OTHER STUDIES	10

TABLE OF CONTENTS - continued

	Page
8.0 LOCATION OF DATA	10
9.0 BIBLIOGRAPHY AND REFERENCES	10

FIGURES

Figure 1 - Vicinity Map	3
Figure 2 - Floodway Schematic	8

EXHIBITS

Exhibit 1 - Flood Profiles
Bayou Dorcheat Panel 01P

Exhibit 2 - Flood Insurance Rate Map Index and Street Index
Flood Insurance Rate Map

Exhibit 3 - Elevation Reference Marks

FLOOD INSURANCE STUDY
UNINCORPORATED AREAS OF WEBSTER PARISH, LOUISIANA

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the unincorporated areas of Webster Parish, Louisiana, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were prepared by the U. S. Geological Survey (USGS) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-85-E-1823, Project Order No. 9. This work was completed in April 1986.

1.3 Coordination

On November 28, 1984, an initial Consultation and Coordination Officer's (CCO) meeting was held with representatives from FEMA, Webster Parish, and the USGS (the study contractor) to determine the streams to be studied by detailed methods.

On July 6, 1987, a final CCO meeting was held with representatives from FEMA, the parish, and the study contractor to review the results of the study.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the unincorporated areas of Webster Parish, Louisiana. The following communities are located within Webster Parish but are not included in this study: the Villages of Shengaloo, Heflin, Sarepta, Dubberly, Dixie Inn, Doyline, and Sibley; the Towns of Cullen and Cotton Valley; and the Cities of Minden and Springhill. The area of study is shown on the Vicinity Map (Figure 1).

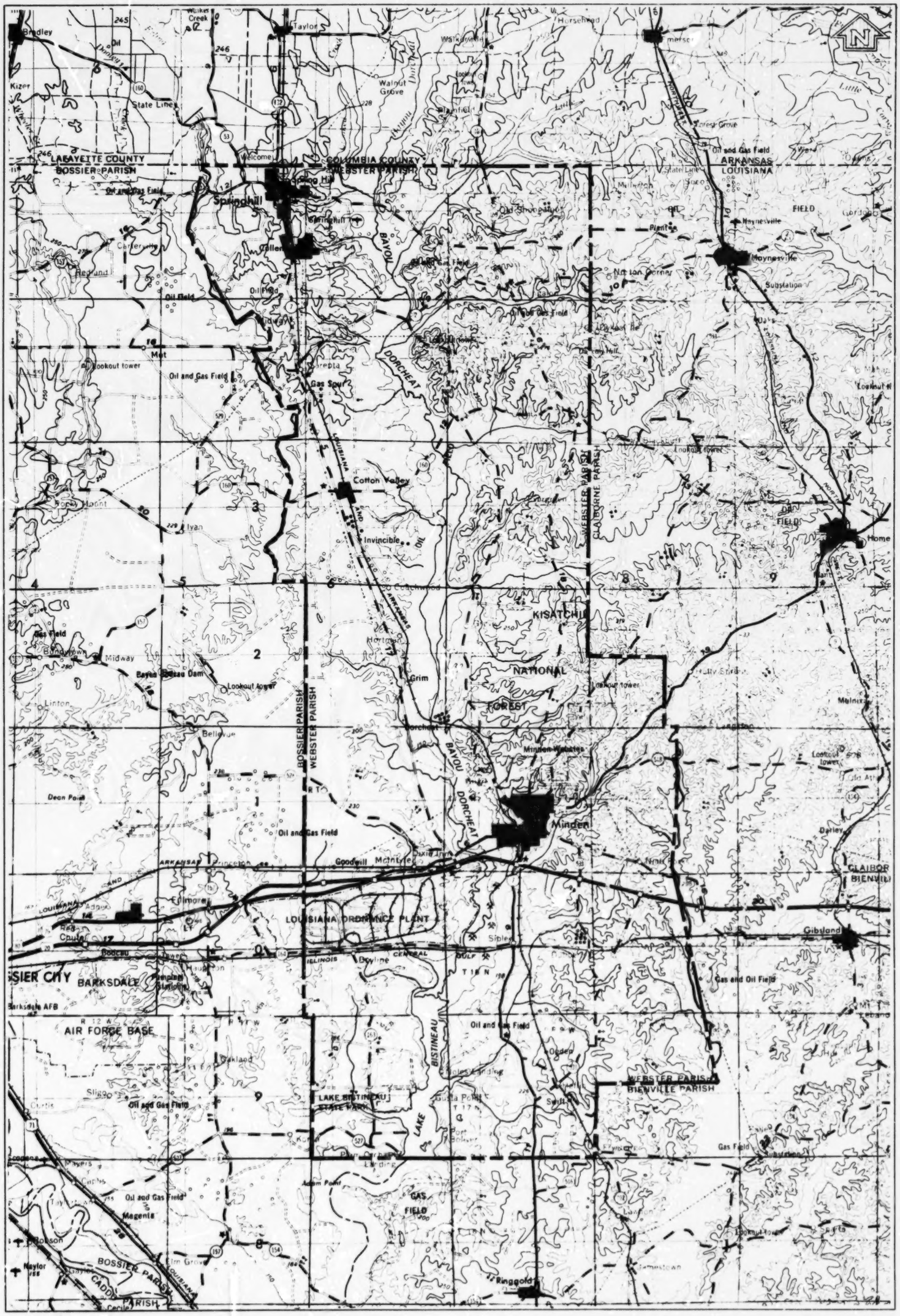
Bayou Dorcheat was studied by detailed methods from a point approximately 600 feet upstream of U. S. Routes 79 and 80 to a point approximately 1.78 miles upstream. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction through April 1991.

The following streams were studied by approximate methods: the remaining portions of Bayou Dorcheat, Cypress Creek, Bodcau Bayou, Howell Creek, Indian Creek, Near Creek, Hall Branch, Crooked Creek, Braley Creek, Lake Bistineau, Brushy Creek, Cooley Creek, Hurley Branch, Ianyard Creek, Parmers Creek, Mud Branch, Black Bayou, Flat Lick Bayou, Caney Creek, Glass Creek, Leonard Branch, Little Indian Creek, Red Rock Branch, South Cypress Creek, Prairie Bayou, Taylor Branch, Little Crooked Creek, Lick Creek, Howell Creek, Dry Creek, Gray Creek, Wildcat Slough, Davis Slough, Big Slough, Beaver Lake, Cow Creek, Sausman Creek, Cooley Branch, Caney Lakes, Black Lake Bayou, Cow Branch, Sugar Creek, Boone Creek, Brushy Creek, Bottom Branch, Hope Creek, and French Creek. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and Webster Parish.

2.2 Community Description

Webster Parish is located in northwestern Louisiana on the state's border. It is bordered by the unincorporated areas of Bossier Parish to the west; the unincorporated areas of Clairborne Parish to the east; the unincorporated areas of Bienville to the south; and the unincorporated areas of Lafayette and Columbia Counties, Arkansas, to the north.

The floodplain is mostly pasture or woodland with very little residential development and has practically no potential for residential development in the immediate future.


LAFAYETTE COUNTY
BOSSIER PARISH
COLUMBIA COUNTY
WEBSTER PARISH
ARKANSAS
LOUISIANA
Springhill
Cotton Valley
Minden
Haynesville
Homer
Bradley
Taylor
Walnut Grove
State Line
Welcome
Oil and Gas Field
Lookout tower
Met
Ivan
Midway
Bayou Bodcau Dam
Linton
Bellevue
Dean Point
Grim
KISATCHIE
NATIONAL
FOREST
Dorcheat
Bayou Dorcheat
Invincible Oil
Goodwill
McNutt
Dixie Town
Esmore
LOUISIANA ORDNANCE PLANT
Coulee
Bodcau
Doyline
CENTRAL
GULF
ILLINOIS
BOSSIER CITY
BARKSDALE
Barksdale AFB
AIR FORCE BASE
Oakland
Sligo
LAKE BISTINEAU STATE PARK
LAKE BISTINEAU
Swift
WEBSTER PARISH
BIENVILLE PARISH
Gibsland
Ringgold
Magenta
Gas Field
BOSSIER PARISH
CADDO PARISH
LOUISIANA
ARKANSAS
Mt Lebanon
Dorsey
Melrose
Mt Olive
Sibley
Oil and Gas Field
Gas and Oil Field
Subterranean
Lookout tower
Naylor
Cecile
Tim Grove
Adam Point
Darrington
Lindine
Sarepta
Gas Sand
Oil Field
Oil Gas Field
Oil Field
Oil and Gas Field
Oil and Gas Field
Oil and Gas

2.3 Principal Flood Problems

Information supplied by the Police Jury indicated that the main area of flooding within Webster Parish is along Bayou Dorcheat near Minden, Louisiana.

Discharge data were collected on Bayou Dorcheat at the U. S. Routes 79 and 80 bridge crossing near Minden from July 1928 to September 1979. During this period, floods that equaled or exceeded the 10-year recurrence interval have occurred five times. A list of these floods is shown in the following tabulation:

Date	Stage (feet)	Discharge (cfs)	Recurrence Interval (years)
1958	158.65	44,800	80
1930	156.70	40,000	55
1974	157.06	27,300	16
1933	154.87	25,000	13
1957	155.87	23,100	10

The detailed study of Bayou Dorcheat begins immediately upstream from a large sand and gravel operation. The removal of this sand and gravel from the floodplain has probably altered the flow pattern of the stream to some extent.

2.4 Flood Protection Measures

At the time of this study, no flood protection measures exist or have been planned for Webster Parish.

3.0 ENGINEERING METHODS

For the flooding source studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. A flood event of a magnitude which is expected to be equaled or exceeded once on the average during any 100-year period (recurrence interval) has been selected as having special significance for floodplain management and for flood insurance rates. This event, commonly termed the 100-year flood, has a 1 percent chance of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect

flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for the flooding source studied in detail affecting the community.

Peak-discharge data from gaging station No. 07349000 on Bayou Dorcheat was generated as part of a statewide flood-frequency analysis (Reference 1). This report presented equations for estimating T-year discharges for frequencies ranging from 2 to 100 years and recommended using a weighted discharge based on station data and the regression equations for sites where data are available. A weighted flood-frequency curve, based on station flood-frequency discharges and discharges computed using the regression equations, was developed for this study. The 100-year discharges of 47,200 cubic feet per second (cfs) were taken from this curve. A peak stage at the gage of 158.75 feet, corresponding to the 100-year discharge, was taken from a stage-discharge relationship curve of annual-peak data.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the source studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Historic information was used to establish the 100-year flood profile and flood boundary. On July 16, 1985, a field survey was conducted to locate high-water information corresponding to known floods within the study area. The results of the field survey pointed out the location of high water for a flood that occurred in 1974. This high-water mark was at an elevation of 158.35 feet.

Prior to the development of the 100-year flood profile, the following assumptions were made: (1) backwater from the roadway embankments downstream from the study area would be insignificant (Reference 2); and (2) a 100-year profile would parallel the profile of a smaller flood.

The 100-year flood profile was developed by relating it to the profile of the 1974 flood. The 1974 flood profile was developed by plotting the elevations against the longitudinal straight-line distance of the flow path of the 100-year flood upstream from U. S. Routes 79 and 80. The elevation of the 1974 flood peak was 157.06 feet at the gage and 158.35 feet at the recovered high-water mark located at baseline distance 4,800 feet. These two peaks, along with their referenced distances, were then plotted on coordinate graph paper and connected with a straight line. This line was then

extended to the upstream limit of study. The 100-year flood stage (158.75 feet) at the gage was plotted on this graph and a line drawn through this point parallel to the 1974 flood profile. This line represents the 100-year profile for the study area.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1) and the Flood Insurance Rate Map (Exhibit 2) where applicable.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps; the descriptions of the marks are presented in Elevation Reference Marks (Exhibit 3).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100-year floodplain boundaries to assist communities in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. For the stream studied in detail, the 100-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24,000 with a contour interval of 10 feet (Reference 3).

For the flooding sources studied by approximate methods, the 100-year flood boundaries were delineated using the Flood Hazard Boundary Map for the unincorporated areas of Webster Parish (Reference 4).

The 100-year floodplain boundaries are shown on the Flood Insurance Rate Map (Exhibit 2). On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

The area between the floodway and 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 2.

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

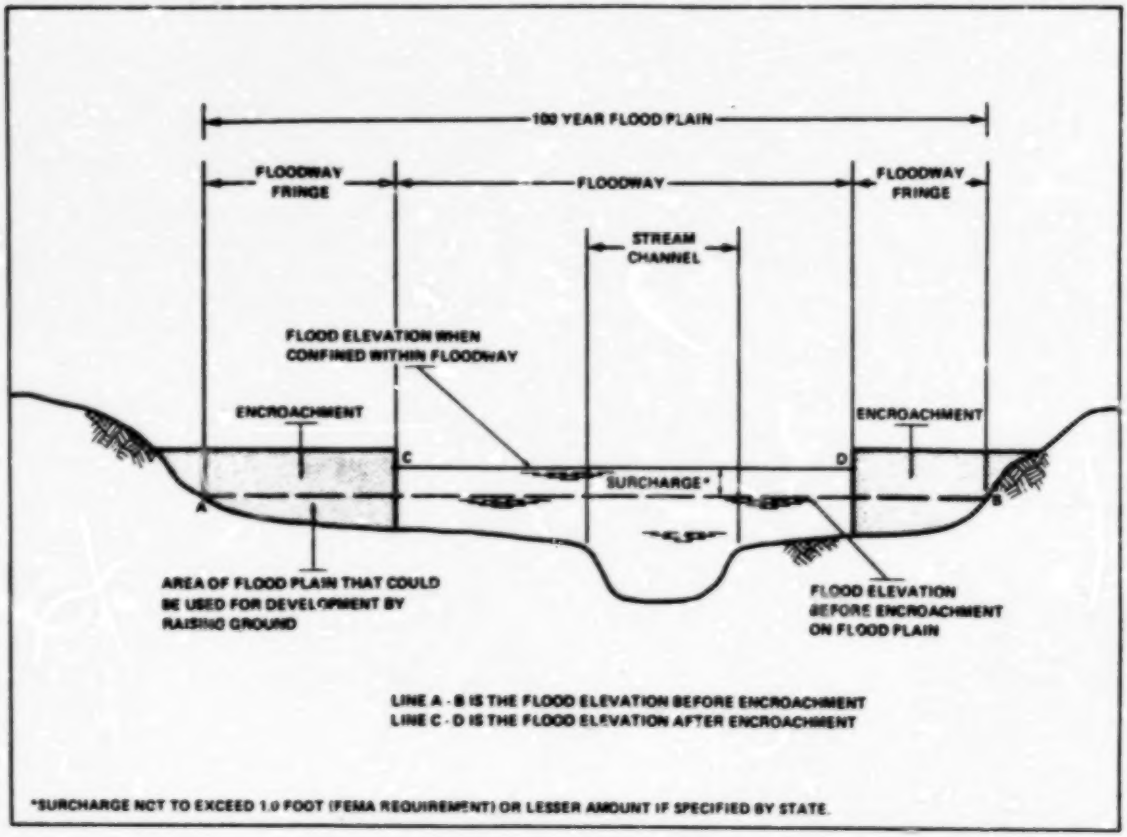
Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

No floodways were calculated as part of this study.


100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A - B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C - D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

FLOODWAY SCHEMATIC Figure 2

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

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Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 100-year floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year floodplain, areas within the 500-year floodplain, and to areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 100-year floodplain. The locations of selected cross sections used in the hydraulic analyses are shown where applicable.

7.0 OTHER STUDIES

Flood Insurance Studies for the Town of Cotton Valley, the Cities of Minden and Springhill, the Villages of Doyline and Sibley, and the unincorporated areas of Bossier Parish have been published (References 5, 6, 7, 8, 9, and 10). The results of this study are in agreement with the results of those studies.

Due to its more detailed nature, this study supersedes the Flood Hazard Boundary Map for the unincorporated areas of Webster Parish (Reference 4).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting FEMA, the Natural and Technological Hazards Division, Federal Regional Center, 800 North Loop 288, Denton, Texas 76201-3698.

9.0 BIBLIOGRAPHY AND REFERENCES

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3. U. S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 Feet: Minden South, Louisiana, 1981.

4. Federal Emergency Management Agency, Federal Insurance Administration, Flood Hazard Boundary Map, Unincorporated Areas of Webster Parish, Louisiana, February 13, 1979.

5. Federal Emergency Management Agency, Flood Insurance Study, Town of Cotton Valley, Webster Parish, Louisiana, Washington, D. C., October 15, 1985.

6. Federal Emergency Management Agency, Flood Insurance Study, City of Minden, Webster Parish, Louisiana, Washington, D. C., July 18, 1985.

7. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, City of Springhill, Webster Parish, Louisiana, Washington, D. C., June 15, 1981.

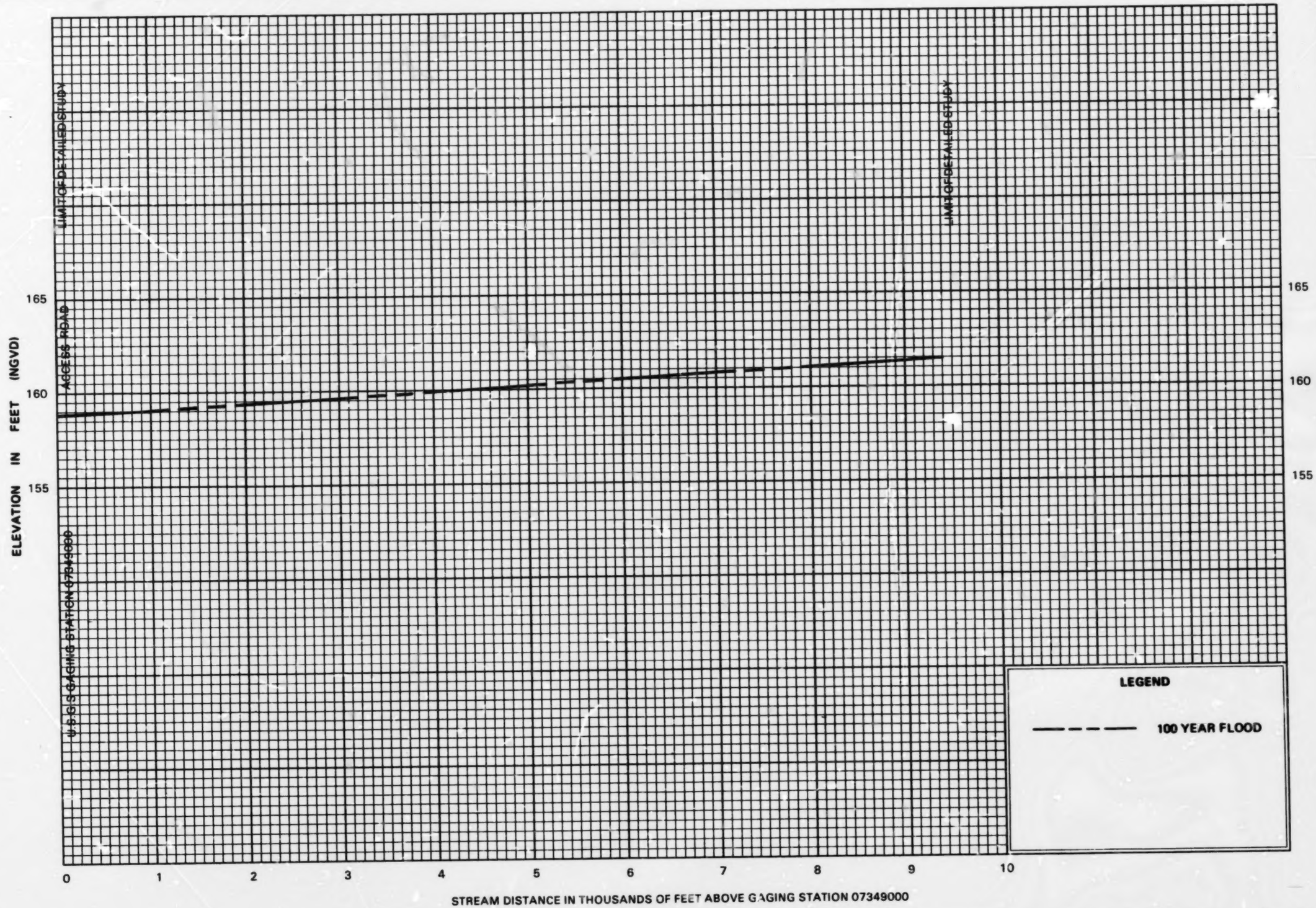
8. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Village of Doyline, Webster Parish, Louisiana, Washington, D. C., September 18, 1979.

9. Federal Emergency Management Agency, Flood Insurance Study, Village of Sibley, Webster Parish, Louisiana, Washington, D. C., July 18, 1985.

10. U. S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Insurance Study, Unincorporated Areas of Bossier Parish, Louisiana, Washington, D. C., September 6, 1977.

EXHIBIT 3 - ELEVATION REFERENCE MARKS

Reference Mark	FIRM Panel	Elevation (Feet NGVD)	Description of Location
RM 1	200	156.84	Chiseled square on streamward side of downstream right bank abutment of bridge over Bayou Dorcheat.
RM 2	200	156.795	Chiseled "X" in streamward side of downstream end of left bank abutment over main channel bridge over Bayou Dorcheat.
RM 3	175	166.46	8 p. nail set 18 inches above ground surface in a power pole located at intersection of Highway 7 and parish road and 0.4 mile north of intersection of Highway 528 and 7.



FLOOD PROFILES

BAYOU DORCHEAT

FEDERAL EMERGENCY MANAGEMENT AGENCY

WEBSTER PARISH, LA
(UNINCORPORATED AREAS)

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